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Charles Emile Picard

recently elected permanent secretary of the Paris Academy of Sciences in succession to the late Jean Gaston Darboux. Both M. Picard and M. Darboux have been professors of mathematics and have been active in matters of national defense and in increasing the services to the nation of the Paris Academy of Science. Like M. Painleve the present premier of France, also professor of mathematics, their activities seem to disprove the prevalent idea that mathematicians are not efficient in practical affairs.

THE PROGRESS OF SCIENCE

WORK OF THE CORPS OF ENGINEERS OF THE ARMY

THE Corps of Engineers of the Army since April 6 has not only been supplying the engineer equipment for an army of a million men, but has undertaken the unprecedented task of furnishing railroads complete from the United States for operation in France. The engineers construct the free arteries through which flow great armies, reinforcements, supplies and ammunition to the extremities of the lines.

From March 1 to November 1 the Corps of Engineers increased its personnel from 256 officers on the active list to 394 officers and 14 retired officers on active duty and in addition has commissioned more than 5,000 reserve officers. The enlisted force has expanded from 2,100 to 95,000, and there has also been a heavy increase in civilian employees. In addition, nine railroad regiments and one forestry regiment have been raised as part of the National Army, Seventeen pioneer regiments have been authorized as part of the National Army and are rapidly organizing. National Guard units, equivalent to about seven regiments, have been called into the Federal service, and their reorganization into 17 pioneer engineer regiments for the 17 divisions of National Guard troops is well under way.

Engineer officers' training camps were established in each of the 16 training camp areas the number of candidates for engineer commissions taken from each camp being 150. After a month's training in the same camps with candidates for commissions in other branches of the service the engineer sections were transferred to three engineer training camps with special facilities for technical instruction, one in the vicinity of Washington, one at Fort Leavenworth, Kans., and one at Vancouver Barracks, Wash. Instruction was continued there for two months. In August, 1,900 candidates were graduated and are now holding commissions.

Large numbers of engineer graduates of training camps have been assigned to new regiments and special units are being organized and the training of enlisted men in the National Army will be largely under their supervision. A number are in France for special training. On December 1 about 1,200 Engineer Reserve officers will be graduated from a second engineer officers' training camp.

A duty imposed upon the enginers has been the purchase of the necessary engineer equipment for more than 1,000,000 men. The urgent deficiencies act approved June 15, 1917, appropriated for the purpose amounts aggregating in excess of $130,000,000, an amount comparable with the purchase of material equipment, and supplies for the Panama Canal during the ten years of its construction. The urgent deficiencies act approved October 6, 1917, provides $198,100,000 additional for engineer purposes and it is expected that all of this will be expended during the present fiscal year.

Within 350 hours after the Engineer Corps, following the declaration of war, advertised for equipment, awards had been made covering the requirements of 1,000,000 men, a total of 8,700,000 articles, which included among other items 4 miles of pontoon bridge. Approximately two months was the average time of delivery secured on all of this material. On September 7, two weeks after receipt of instructions, equipment was en route to the various National Guard and National Army organizations at cantonments throughout the country. These shipments comprised a total of about 48,000,000 pounds in some 64,000 separate cases and packages.

By November 1 the outstanding obligations on orders placed for engineer material, equipment, and supplies, aggregated $130,000,000, and disbursements in payments for material delivered had reached the sum of $15,000,000 per month. Another important task of the engineers has been to provide efficient methods for the receipt, storage, and shipment abroad, with proper accounting system, for this mass of supplies as well as for the vast equipment for field operations and construction work.

The engineers of the railway section have undertaken to transport and install and put into operation overseas a complete railroad equipment. The railway problem in the theater of operations in France involves not only the organization, equipment and military training of railroad troops for the construction, maintenance and operation of standard and narrow gauge roads necessary for the supply of our armies, but also the purchase, inspection and shipment of immense quantities of railroad equipment—rails, ties, locomotives, cars, shop tools, etc.—necessary for the development of adequate port facilities, construction of new lines and their successful operation. The estimate of the situation in France was confirmed by the French commission, headed by Marshal Joffre, and the means of meeting it have been carried on with intensity.

Trained officials in various departments of American railroads were called upon for the officers, and experienced railroad employees for the enlisted men, of the nine railroad regiments, each of 33 officers and approximately 1,100 men.

The cost of materials ordered to date is approximately $70,000,000 including some hundreds of locomotives, more than 100,000 tons of steel rails, more than 3,000 complete turnouts, 500,000 ties, 12,000 freight cars, 600 fill and ballast cars, 600 miles of telephone wire and apparatus, as well as vast quantities of construction and repair equipment.

The engineers have also undertaken the work of organizing and equipping special troops for special services, such as lumber supply, road construction, sanitary construction, camouflage service, gas and flame service, mining work, mapping, etc. Preferred attention has been given to the organization and equipment of the first forestry regiment, to be sent to France to produce lumber and timber from French forests. Three additional regiments are to be organized. The cooperation of the Forestry Service of the Department of Agriculture has been extended in the selection of personnel and equipment. In addition to all of these duties, the Engineer Corps has maintained its regular service in the preservation and improvement of navigable waters in the United States and construction of coast defenses. New batteries are being pushed to completion with energy.

THE NATIONAL ASSOCIATION OF AUDUBON SOCIETIES.

THE European war has so stimulated a study of the economic uses of birds that the National Association of Audubon Societies was able to report at its annual meeting on October 30 that its sustaining membership had increased thirty-three and a third per cent. during the last year. The growth of the society and the generous financial support